

WHAT IS CLAIMED IS:

1. A digital watermark embedding apparatus which generates an output image signal by embedding a digital watermark signal in an input image signal, comprising:

5       a detector which detects a signal characteristic of at least one of the input image signal and the output image signal; and

          a control device configured to control an embedding intensity of the digital watermark signal with respect to the input image signal in accordance with the signal characteristic.

10

2. The digital watermark embedding apparatus according to claim 1, wherein the detector detects a signal intensity of the digital watermark signal which is extracted from the output image signal.

15

3. The digital watermark embedding apparatus according to claim 1, wherein the detector detects an image quality degradation degree of the output image signal with respect to the input image signal.

20       4. The digital watermark embedding apparatus according to claim 1, wherein the detector detects an activity indicating complexity from at least one of the input image signal and the digital watermark signal.

25       5. The digital watermark embedding apparatus according to claim 1, wherein the detector comprises:

          a first detector which detects a signal intensity of the digital watermark signal which is extracted from

the output image signal; and

a second detector which detects an activity indicating complexity from at least one of the input image signal and the digital watermark signal, and

5 the control device controls the embedding intensity of the digital watermark signal with respect to the input image signal in accordance with the signal intensity and the activity.

6. The digital watermark embedding apparatus  
10 according to claim 1, wherein the detector comprises:

a first detector which detects an image quality degradation degree of the output image signal with respect to the input image signal; and

a second detector which detects an activity  
15 indicating complexity from at least one of the input image signal and the digital watermark signal, and

wherein the control device controls the embedding intensity of the digital watermark signal with respect to the input image signal in accordance with the image  
20 quality degradation degree and the activity.

7. A digital watermark detecting apparatus which detects a digital watermark signal included in a compressed first image signal, comprising:

a decoder which decodes the first image signal  
25 into a non-compressed second image signal; and

a detector which detects the digital watermark signal from the second image signal.

8. The digital watermark detecting apparatus according to claim 7, further comprising an embedding device configured to embed a second digital watermark signal different from the digital watermark signal in  
5 the second image signal.

9. A digital watermark embedding apparatus comprising:

an embedding device configured to embed a digital watermark signal in an input image signal having a  
10 first frame rate to generate a first image signal; and  
a converter which converts the first image signal into an output image signal having a second frame rate different from the first frame rate.

10. The digital watermark embedding apparatus  
15 according to claim 9, further comprising a decoder which decodes the input image signal into a non-compressed image signal, when the input image signal is compressed,

wherein the embedding device embeds the digital  
20 watermark signal in the non-compressed image signal.

11. A digital watermark embedding apparatus which generates an output image signal by embedding a digital watermark signal in an input image signal which is generated by telecine conversion based on insertion of  
25 a repeat field, comprising:

a detector which detects a repeat field from the input image signal,

an embedding device embeds in the input image signal the same digital watermark signal as a digital watermark signal embedded in a precedent field with respect to the repeat field.

5           12. A digital watermark embedding apparatus, comprising:

          a converter which subjects the input image signal to inverse telecine conversion to generate a converted image signal; and

10           a generator which generates a digital watermark signal with respect to the converted image signal in units of frame,

          an embedding device embeds the digital watermark signal in the converted image signal in units of frame.

15           13. A digital watermark embedding apparatus, comprising:

          a first generator which estimates a geometric deformation undergone by a input image signal which embeds a digital watermark signal, and generates  
20           a parameter concerning the geometric deformation;

          a second generator which generates a geometrically deformed second digital watermark signal in accordance with the parameter, and;

          an embedding device embeds the second digital watermark signal in the input image signal to generate  
25           a output image signal.

          14. A digital watermark embedding apparatus,

comprising:

a first generator which estimates a geometric deformation undergone by a input image signal which embeds a digital watermark signal, and generates

5 a parameter concerning the geometric deformation;

a second generator which generates a geometrically deformed second digital watermark signal in accordance with the parameter;

a first detector which detects a signal intensity  
10 of the first digital watermark signal which is extracted from the input image signal;

a second detector which detects a signal intensity of the second digital watermark signal which is extracted from the output image signal;

15 an embedding device embeds the second digital watermark signal in the input image signal to generate a output image signal; and

a control device configured to control an embedding intensity of the second digital watermark  
20 signal with respect to the input image signal in accordance with a greatness relationship between the signal intensity of the first digital watermark signal and the signal intensity of the second digital watermark signal.

25 15. A digital watermark embedding apparatus, comprising:

a first generator which estimates a geometric

deformation undergone by a input image signal which embeds a digital watermark signal, and generates a parameter concerning the geometric deformation;

5 a second generator which generates a geometrically deformed second digital watermark signal in accordance with the parameter;

a detector which detects the first digital watermark signal from the input image signal at given intervals, and;

10 an embedding device embeds the second digital watermark signal in the input image signal for a given time or more after a point in time that the first digital watermark signal is detected.

15 16. A digital watermark embedding apparatus, comprising:

a decoder which decodes an input image signal into a non-compressed image signal, when the input image signal is compressed; and

20 an output device configured to output the non-compressed image signal and information concerning a display timing of at least one of an image frame and field,

25 an embedding device embeds a digital watermark signal in the non-compressed image signal in accordance with the information of the display timing.

17. A digital watermark detecting apparatus, comprising:

a decoder which decodes an input image signal having a digital watermark signal embedded therein into a non-compressed image signal, when the input image signal is compressed;

5           an output device configured to output the non-compressed image signal and information concerning a display timing of at least one of an image frame and field; and

10           a detector which detects a digital watermark signal from the non-compressed image signal in accordance with the information of the display timing.

18. A digital watermark embedding apparatus, comprising:

15           a decoder which decodes the input image signal having a first digital watermark signal embedded therein into a non-compressed image signal, when the input image signal is compressed; and

20           an output device configured to output the third image signal and information concerning a display timing of an image frame or field,

          an embedding device embeds a second digital watermark signal in the non-compressed image signal in accordance with information of the display timing.